

Outside the Walls:

Exploring the Benefits of Outdoor-Based Learning for Children's Development

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Introduction: Forest Kindergartens and Outdoor-Based Learning

Imagine for a moment that you're three years old again. You wake up and dress for school, slipping into your rain suit and hiking boots. The morning is full of activity - crossing

streams and collecting rocks. When the lunch hour arrives, you find your seat, a smooth log by the fire pit. The afternoon is mostly spent working on a group project - collecting rocks and comparing their textures and sizes. The day draws to a close and you sit in a circle with your classmates, discussing the birds you heard that day and wondering what adventures tomorrow will bring.

For some kids, the scene just described isn't solely an imagination. These kids are part of an educational phenomenon called "forest kindergartens," preschool programs for children ages three to six. At a forest kindergarten, every day, rain or shine, is spent outdoors in nature. With no formal curriculum, students and teachers find learning opportunities in the surrounding environment, using sticks and acorns as educational tools (Mills, 2009).

The phenomenon of forest kindergartens, popular in many European countries, was first introduced in Denmark in 1950 by a woman named Ella Flatau (Stasiuk, n.d.). These outdoor schools, called *waldkindergartens* in German, are designed to nurture children's social development through exploration of nature. Though the implementation of forest kindergartens gained momentum in Europe in the 1950s and 60s, the ideology of forest kindergartens can actually be traced back to the early 1800s (Wilson, 2012). In 1840, Friedrich Froebel, a German educator known for recognizing the importance of play in learning, introduced the term "kindergarten" (Wilson, 2012). "Kindergarten" in German directly translates to "children's garden" in English, reflecting Froebel's desire to encourage children's exploration of nature. Froebel's ideas influenced the development of play-based kindergarten institutions across Europe, and eventually the US. (Wilson, 2012)

Though looking at kindergartens today suggests that early childhood education has transitioned to a much more formal model, institutions dedicated to Froebel's values of play and

outdoor exploration remain. Over the past decade, the number of schools in the United States that place nature at the center of their program has grown exponentially (Merrick, 2016). Though there is no federal or state regulation of these nature-based schools, an organization called the Natural Start Alliance was founded in 2013 to track nature preschool providers. As of February 2016, the Natural Start Alliance claimed that there are over 150 nature-based preschools in the United States (Merrick, 2016). The momentum of this movement has garnered national attention and highlighted the importance of children engaging with nature.

The model of forest kindergartens described here exemplifies the concept of outdoor-based learning. This refers to an educational experience where the outdoors serves as the primary learning environment. This type of educational experience allows children to actively engage their senses, and in doing so, deepen their learning (Louv, 2008). Outdoor-based learning can stimulate and challenge students in different ways, both physically and mentally. This model is not exclusive to forest kindergarten institutions. In fact, academically rigorous programs for high schoolers exist that offer students the opportunity to participate in outdoor-based classes, focused on experiential learning. Often a semester long, these programs challenge students to engage with their surrounding environment, whether it is the mountains of Colorado or the reefs of the Bahamas. Studying the educational benefits of this model can inform the creation of educational opportunities for other ages.

In this paper I seek to explore the benefits that participating in outdoor-based learning can offer children. The first section of this paper examines how exposure to nature impacts children's development. This creates a foundation for what children could gain by participating in outdoor learning. Section two focuses on a case study of an outdoor-based learning institution for high school juniors called the High Mountain Institute. I examine how intellectual inquiry and

wilderness exploration are merged in the mountains of Colorado. This case review helps us understand how this educational model contributes to students' growth and promotes interpersonal skills. Given the developmental benefits of children's exposure to nature and the educational benefits of high school students' engagement with outdoor learning, section three is dedicated to examining how to promote outdoor-based learning experiences for elementary school students.

Section One: Outdoor Exposure and Child Development

In the past two to three decades, educators and scholars have expressed concerns that there is an increasing divide between children and the natural world. Richard Louv, author of *Last Child in the Woods*, refers to this phenomenon as "nature-deficit disorder" (Louv, 2008). He explains that this disorder, though not clinical, relates to trends in children's mental and physical health. Louv argues that children today have less exposure to nature and less opportunity to explore natural landscapes. He claims that the American "baby boomer generation," individuals born between 1946 and 1964, constitute the last generation to share an intimate attachment to nature. Understanding how this attachment to nature affects children's health is essential to providing children with opportunities that promote wellbeing.

Research indicates that children today are not only in nature less, but actually are outdoors less than their parents were in childhood (Clements, 2004). A study conducted by researcher and educator Rhonda Clements highlights these generational differences in the US; Clements found that while 70% of mothers in the survey reported having played outdoors daily, only 31% of the group reported that their children play outdoors daily. The decline in children's outdoor exposure appears to affect other countries as well. Researchers from Australia found that over a five-year period from 2001-2006, the time that children ages 5-6 and 10-12 spent outdoors

after school significantly decreased in all groups (Cleland, Timperio, Salmon, Hume, Baur, & Crawford, 2009). Their research focused on the factors that promote or hinder outdoor play.

They found that social opportunities, such as having friends to go outside with, were especially strong predictors of outdoor time for young boys. They also found that parental encouragement in girls was a greater predictor of time spent outdoors than it was in boys.

Children's outdoor play has changed not only in terms of time spent in the outdoors, but also in how that time is spent. The USDA Forest Service administered a survey to 1,450 households in the US, documenting children's activities outdoors between 2007 and 2009 (Larson, Green, & Cordell, 2011). For children ages 6-15, a parent/guardian was interviewed, and children ages 16-19 were interviewed directly. Larson and colleagues found that one of the most common activities children participated in outdoors was using electronics; 65.3% of children reported that they often spent time outdoors listening to music, playing video games, or texting. This finding suggests that even when children do spend time outdoors, their activities are frequently less nature-oriented and more electronics-oriented. This highlights a concern expressed by educators, including Richard Louv, that children today are immersed in a digital world.

For the past three decades, the American Academy of Pediatrics [AAP] has expressed concern about the growing prevalence of media in children and adolescents' lives (AAP, 2013). Children today are growing up in a world where building friendships involves increasing connections on Facebook and learning geometry involves drawing shapes on a "SMART Board." The Kaiser Family Foundation published a survey in 2010 on children's media time and found that among 8-18 year olds, the average child spends over seven hours a day on media platforms (Kaiser, 2010). Holding this figure in your mind, now consider children's ability to multitask.

Children often use many media platforms at once; they are able to watch tv at the same time as they browse the internet on their laptop *and* text on their mobile device. This means that children pack in around eleven hours of media into those seven hours (Kaiser, 2010)!

Children's time spent immersed in media has serious implications for their social development (Plowman, McPake, & Stephen, 2008). Immersing children in electronics can replace social interaction that is essential to developing interpersonal social and emotional skills. Social stimulation is especially important for young children because this is the time when the brain is developing the most. Rather than trying to entertain or distract upset children with a screen, parents should talk to their children to promote healthy social development and emotion regulation. Given the impact of media exposure on children's development, the AAP releases recommendations for children's media time. In 2013, the AAP recommended that children's time spent on media be limited to two hours a day, and that screen exposure for children under two years old should be minimized (AAP, 2013). The AAP also suggests practices for parents and educators such as promoting outdoor activities with the family and creating screen-free zones (AAP, 2013).

The time that children spend engaging with media platforms also impacts their physical health. Child obesity is a major public health issue today. The American Heart Association [AHA] reported in February 2016 that the number of children that are overweight has tripled over the past fifty years, with one in three children today being overweight or obese (AHA, 2016). The increase in childhood obesity is associated with a range of health problems, both physiological and psychological. The AHA recommends that children should participate in at least sixty minutes of physical activity per day to improve their psychological wellbeing and reduce their risk of cardiovascular diseases. A cross-sectional study published in 2010 looked at

at the percentage of U.S. children ages 6-11 who met physical activity and screen time recommendations established by the American Academy of Pediatrics (Fakhouri, Hughes, Brody, Kit, & Ogden, 2013). Fakhouri et al. found that 70% of children met physical activity recommendations, while 54% met screen-time recommendations. 38% of children in the study met both requirements, and obese children were less likely to meet these requirements concurrently than non-obese children. Given the impact of physical activity on children's healthy development, it is important to understand how to effectively promote physical activity. The positive correlation between time outdoors and physical activity (Ferreira, Van der Horst, Wendelvos, Kremers, Van Lenthe, & Brug, 2007) suggests that encouraging children to spend time outdoors has serious implications for children's wellbeing.

The discussion of children's time outdoors is closely tied to the discussion of play. In the field of early childhood education, play is highly valued: "as an intrinsically motivated behavior, play may be the most important process through which children learn to adapt to the world and become more mature" (Rogers & Sawyers, 1988). Educators see play as critical to children's physical, cognitive, and social development. The nature of play as a self-controlled activity allows children to complicate the activity to the appropriate level. Research indicates that engaging in play, specifically sociodramatic play where children role play, is associated with increases in cooperation (Smith & Syddall, 1978), perspective taking (Smith & Syddall, 1978), social participation (Smith, Daghlish, & Herzmark, 1981), and impulse control (Saltz, Dixon, & Johnson, 1977) in children. Though play is linked with significant developmental benefits, not all play is created equal. Comparing structured play with unstructured play suggests that unstructured play may offer children certain socioemotional benefits that structured play does not (Gray, 2011).

Peter Gray, a developmental psychologist, contends that free play is essential for children's healthy psychological development (Gray, 2011). Gray examines how children's opportunities for free play have declined over the past several decades, and the major effects on children's wellbeing. Gray specifically outlines five ways in which free play promote children's mental health. First, play helps children develop intrinsic interests. Interests or goals that are intrinsic are those that are motivated by innate psychological needs, whereas extrinsic goals are motivated by external rewards. Gray explains that when children pursue extrinsic goals, their satisfaction is based on the rewards they receive; these rewards, i.e. receiving a job or a trophy, are dependent on judgment of others. This relationship can lead them to pursue activities for the sake of receiving praise, and lead them to have low self esteem.

The second value of free play is that it promotes problem solving and decision making skills (Gray, 2011). In free play, children are given the opportunity to manage the environment around them. In structured activities, children follow the rules and decisions of the adults. The third value outlined by Gray is that free play helps children learn emotion regulation. Emotion regulation is especially relevant in free play because free play often involves a social element and children must be able to face, and work through, conflicts that arise (Gray, 2011). Gray claims that the fourth value of free play is that it promotes mutual respect and cooperation. Because children want to play with each other, they learn to cooperate and try to keep others happy so that their playmates don't leave (Gray, 2011). Free play is essential to helping children build social support networks, which is important for psychological health. Finally, the last value outlined by Gray is that free play is important for children because it provides them with joy (Gray, 2011). Valuing activities that promote extrinsic goals, such as academic pursuits or competitive sports, is dangerous because this pushes children into settings that promote anxiety.

We must provide children with play opportunities that provide happiness in order to nurture their psychological development.

Opportunities for social development are enhanced in natural settings because it helps facilitate especially strong bonds between children (Louv, 2008). Louv develops a theory in *Last Child in the Woods* for the process by which nature facilitates friendships. He explains first that playing in nature enlivens children's senses, and second that friendships tend to evolve out of shared experiences. Louv argues that the heightened activation of senses makes the shared experiences in nature feel more intense and significant, which in turn creates stronger bonds between children (Louv, 2008, p. 79). This indicates that exposure to nature can be valuable for children not only to build social skills, but also to build social relationships.

Another argument for the value of nature in children's lives is because of its impact on children's emotional wellbeing. Research indicates that being exposed to natural environments can help increase children's resilience against adversity (Wells & Evans, 2003). Wells and Evans looked at how the presence of vegetation can moderate the impact of stressful life events on children's levels of psychological distress and self worth. Their study, focused on children in grades 3-5 in rural settings, found that the impact of stressful life events on psychological health was lower for children who lived near nature than for children who did not live near nature. This is important because it indicates that the environment can play a large role on children's ability to cope with stress and can serve as a protective factor for children. Understanding how nature can benefit children psychologically is essential for fostering the resilience of children.

The power of nature to support healthy development has led to research on "nature therapy." Specifically, researchers have been interested in looking at how nature can moderate symptoms of children with Attention Deficit Hyperactivity Disorder (ADHD) or Attention

Deficit Disorder (ADD) (Taylor, Kuo, & Sullivan, 2001). ADHD and ADD are both characterized by difficulties with attentional control and concentration. These disorders are usually treated with stimulant medications such as ritalin, but these medications can cause serious side effects such as disruptions in sleep and depressive symptoms (Taylor et al., 2001). Nature therapy is based on the concept of Attention Restoration Theory; this is the idea that natural environments draw on people's *involuntary attention*, which gives the brain a rest from *voluntary attention* (Taylor et al., 2001). Voluntary attention is used to problem solve and complete tasks and therefore requires much effort and concentration (Kaplan 1995). The recovery period that nature allows helps prevent the brain from being overtired and helps sustain voluntary attention when it is needed again (Kaplan, 1995). Researchers looking at the impact of nature on ADD symptoms found that children with ADD showed significantly improved attentional functioning after leisure activities in green environments compared to other environments (indoors or structured outdoor play) (Taylor et al, 2001). This finding indicates that nature is a strong therapeutic tool for promoting mental health, and can encourage researchers to further explore the potential of nature therapy.

Looking at the broad range of benefits of exposing children to nature suggests that we should place greater emphasis on incorporating nature into children's lives. Integrating research from different educators and scholars has revealed that experiences in the outdoors can promote children's healthy physical wellbeing, improve children's emotion regulation, support psychological wellbeing, and help foster social skills and friendships. Given the wealth of benefits from exposure to nature, incorporating outdoor experiences into education can be a promising method of enhancing learning. Promoting learning outside the classroom reflects one of the main tenets of Froebel's educational philosophy. Froebel challenged traditional concepts

of teaching models and encouraged educators to construct creative learning experiences for their students: “Froebelians demonstrated more clearly than ever before that education is above all a creative process in which the learner is actively involved, a matter of ‘drawing out rather than putting in’” (Liebschner, 1991, p. 138). This type of model, that integrates outdoor experience and active learning, can offer benefits that conventional models of education cannot. In the next section, I will look at an outdoor-based learning model for adolescents, specifically high school juniors, and explore the opportunities it offers for students’ growth and development.

Section Two: A Model of Outdoor-Based Learning, the High Mountain Institute

Challenging traditional notions of schooling gave birth to progressive education. John Dewey (1859-1952) was a philosopher and social reformer whose theories were central to the development of progressive education. John Dewey claimed that the transfer of knowledge from teacher to pupil was an inadequate form of education, and strove to enhance the schooling model. Dewey argued that, “it is the cardinal precept of the newer school of education that the beginning of instruction shall be made with the experience learners already have” (Dewey, 1963). Dewey’s philosophy was based on the idea that children should be actively involved in the process of learning. Progressive education programs today are united by several elements, many of which were important to Dewey; among these elements are an emphasis on problem solving and critical thinking skills, collaboration, cultivation of individualism, and learning by doing.

One branch of progressive education, stemming from challenges to the concept of the four-walled classroom, is outdoor education. Environmental education and experiential education are two more terms that interplay with this field. It’s important to clearly define these different approaches to education. Though all three are relevant to the focus of this paper,

examining outdoor-based learning experiences for students, the three remain distinct in their objectives.

The notion of outdoor education is characterized by the idea of the outdoors as a context for learning (Hammerman, Hammerman, & Hammerman, 2001). Julian W. Smith is a key figure in understanding the roots and objectives of outdoor education. Dr. Smith was an educator and administrator at Michigan State University and served as the director of the National Outdoor Education Project from 1953 to 1972. The Outdoor Education Project (OEP) emerged after a national survey on outdoor activities was conducted by the United States Fish and Wildlife Service. The OEP was designed to help prepare America's youth with the knowledge and skills to enjoy the outdoors, and help foster an attachment to nature (Michigan State University, n.d.). Government committees, educational organizations, conservation agencies, and businesses all collaborated to develop outdoor education programs in schools and colleges and leadership training programs. Dr. Smith made strong claims about the power of connecting with nature:

...As children and youth find new and exciting adventures in learning outdoors, the label of the leader will matter little - whether it be educator, conservationist, recreationist, youth leader, or minister- for all are teachers in the broadest sense...The process will not only help in the conservation of natural resources; it will also serve to prevent human "erosion" (Smith, 1957).

Dr. Smith helped promote the value of providing children with experiences in nature and furthermore, incorporating outdoor experiences into school programs.

Having defined outdoor education, we turn to the concepts of experiential education and environmental education. Experiential education is defined as "learning by doing" (Hammerman et al., 2001). This educational approach encourages students to gain knowledge and skills

through direct experience. Learning is seen as an active process, with teachers and students both as learners. Experiential education can take place in any setting, whether it is a four-walled classroom or a path in the forest. Outdoor education is closely tied to experiential education; outdoor educators embrace the idea of promoting learning objectives through experiences in outdoor settings and engaging with natural materials. This leads us to the idea of environmental education. Whereas outdoor education focuses on the setting of learning, and experiential education focuses on the process of learning, environmental education focuses on the content of learning. The Belgrade Charter, published in 1976 by a committee representing the United Nations Educational, Scientific and Cultural Organization-United Nations Environment Programme [UNESCO-UNEP] states the objective of environmental education:

The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones (UNESCO-UNEP, 1976).

Environmental education, like experiential education, can occur in the classroom or outside classroom walls. I emphasize the boundaries between outdoor education, experiential education, and environmental education because this paper is focused specifically on exploring the value of learning *in* the outdoors (outdoor education). That said, it's certainly not uncommon for outdoor educational programs to also involve experiential education and environmental education elements.

The High Mountain Institute [HMI] is an educational organization in Leadville, Colorado that fuses academics and the natural world (HMI, n.d.). The High Mountain Institute provides

high school students with the opportunity to spend a semester away from a traditional school program. Though students take the same course areas they would at a traditional school - mathematics, science, english, history - these courses are all designed to draw students' attention to their environment. This influences both the content of curriculum as well as the setting; part of students' coursework is completed in the classroom, and the other part is completed on backpacking expeditions through mountains and canyons. This program exemplifies the integration of outdoor, experiential, and environmental education.

The integrative approach of the High Mountain Institute is an example of place-based education. Bank Street College of Education, a progressive graduate program in Manhattan, explains that place-based education is defined as “education grounded in the built and human (social, cultural, and economic) environment, as well as in the natural environment” (Bank Street College of Education, n.d.). Place-based education encourages students and teachers to explore different contexts as places of learning. This approach to learning transcends the boundaries of the classroom walls, allowing students to develop creative and critical thinking skills by examining the environment around them.

Across America, and cross-culturally, students and teachers are embracing contexts outside the classroom as places of learning. For young kindergarteners in Manhattan with Autism Spectrum Disorder, the Guggenheim Museum becomes a classroom to teach social skills and foster a sense of self (Di Lello, n.d.). Children are guided through activities where they explore shapes and designs, to build their auditory, visual, social, and physical skills. Children's natural exploration is also promoted through the forest kindergarten model I introduced at the beginning of this paper. This phenomenon is observable around the world, from the pacific northwest in the US to small towns in Denmark and even cities in Japan (Neate, 2013). Another place-based

education experience is found in India, where children living in the Himalayan region attend preschool programs based around ecological conservation (Day & Hernandez, n.d.). Teachers conduct lessons around the ponds and forests to introduce children to environmental issues that threaten their community and engage them in sustainable practices.

The programs just described are examples of place-based education experiences for young children, but there are many semester-long educational programs that exist for high school students. The Semester Schools Network is a group of schools that offer high school students the opportunity to spend a semester participating in a unique educational experience, earning a full semester of academic credits (Semesters Schools Network, n.d.). This network is comprised of thirteen schools, mostly in the United States, and each with a different focus. The Coastal Studies for Girls school is a program for tenth grade girls located on the coast of Maine and emphasizing scientific discovery. This program provides a broad honors-level curriculum that allows girls to delve into marine science research projects. The Island School in the Bahamas also has a similar marine biology focus. At the Island School, students are immersed into the natural and cultural landscape of the island of Eleuthera; the entire curriculum is designed with the landscape at its core, from exploring the island's cultural history to the marine ecosystems in the surrounding waters. Another program, called the Mountain School, brings high school juniors from all over the US together to live and work on a farm in rural Vermont. Through the integration of farm work and rigorous academics, students learn about collaborative problem solving and sustainable living.

Though there are many programs in existence that emphasize place-based learning, closely examining the High Mountain Institute as a case study for this type of education model can help uncover the learning benefits it provides. The High Mountain Institute was founded in

1995 by Molly and Christopher Barnes (HMI). Both had experience working in traditional school settings and sought to create a school that emphasized interaction with nature in daily life. This vision translated to the phrase “where nature and minds meet,” which served as the guiding principle for the development of the institution. The school’s mission reflects their desire to push learning beyond the boundaries of the classroom:

HMI nurtures personal growth through interaction with nature and participation in a strong community. We promote intellectual, physical and personal development through insistence on academic excellence, our philosophy of mentoring and apprenticing, and rigorous experiential learning. We seek to promote independent thinking and to develop skills of learning and habits of mind that both enhance self-reliance and transfer beyond the boundaries of HMI (HMI).

The High Mountain Institute’s mission is strongly reflected in all of their programs. Their first and signature program, the HMI Semester for juniors, served as the foundation for the development of programs for other ages. The Summer Term, established in 2011, offers high schoolers in ninth through eleventh grade a five-week condensed version of the Semester program; through wilderness trips in the Rocky Mountains, students learn about environment science, leadership, and environmental ethics. The Gap program, established in 2015, is a three month program for students who have just graduated high school and are about to embark on a new chapter of their lives; Gap leads students through the American West and Patagonia, focusing on outdoor leadership and environmental conservation learning. HMI also offers an Apprentice Program for recent college graduates interested in education. Apprentices participate in academic and wilderness classes during the Semester program, as both a student and a teacher; apprentices are responsible for assisting with academic lessons, leading wilderness expeditions,

engaging in discussions about educational theory, and managing the residential life of the semester students. Finally, HMI conducts a two-week summer adventure program called High Peaks Adventure for students who have finished the seventh or eighth grade; students learn about wilderness and leadership principles while participating in outdoor adventure activities.

The High Mountain Institute's philosophy is composed of three elements: academics, wilderness, and community. It is through the nexus of these three elements that HMI nurtures personal growth in students. To understand how the interplay of these elements impacts students' educational experiences, it's helpful to look at each element in isolation. First, is the academic piece. The HMI Semester has a rigorous and demanding curriculum. Students attend classes six days a week, and each class period is ninety minutes (HMI Curriculum Guide). This long period allows faculty to delve into detailed discussions, as well as lead students in hands-on learning activities. Each course meets for a total of sixty hours per semester, which in some cases exceeds class time hours at students' home schools. The HMI curriculum includes traditional academic courses, all taught at the AP or honors level. Students enroll in 4-5 courses from the following selection: AP United States History, Literature of the Natural World, Natural Science, Intermediate or Advanced Spanish, Mathematics (algebra, precalculus, or calculus). Additionally, all students are required to take "Practices and Principles: Ethics of the Natural World." The level of rigor in the HMI curriculum helps prepare students to thrive academically, intellectually, and socially when they leave the program. Not only are students able to transition smoothly back to their school's curriculum when they return, but also they are equipped with greater critical thinking skills; this is partly due to the small class size (average of ten students), which contributes to a more stimulating learning environment.

Though students take a selection of courses deemed “traditional,” the curriculum of these courses nor the setting of these courses are exactly traditional. Over the course of the semester, students spend twelve weeks on the school’s campus in Leadville, Colorado, and five weeks in the mountains of Colorado and Utah. The mountain time is not successive but rather divided into three backpacking trips that occur at the beginning, middle, and end of the semesters. The nature of this unconventional class time implies that the content of the classes is also unconventional. Each course is designed to encourage students to look at patterns through an ecological lens, thereby challenging students to think more deeply about their environment; for a literature course, this entails looking at humans’ relationship to the natural landscape in the west; for a science course, this means students investigate the ecosystems of the Rocky Mountains; for a history course, students look at how politics, economics, and culture in the American West shaped its development (HMI Curriculum Guide). This approach to learning helps students connect with the material by drawing more meaningful connections.

The High Mountain Institute upholds five core values that guide teaching and learning in the classroom and the wilderness. The five values are: 1) mentorship in and out of the classroom, 2) transference of what students learn beyond the High Mountain Institute, 3) place- and community-based education, 4) process-based learning that teaches students how to think, not what to think, and conveys a passion for learning, 5) integration of the natural world, academics, and residential life (HMI Curriculum Guide). This group of values reflects ideas that were important to Froebel; primarily, there is a large emphasis on learning as an active process that requires a dynamic relationship between student and teacher. Strengthening ties between students and faculty plays an important role in developing students’ passion for learning. If students feel supported, both by their peers and their teachers, they are more likely to challenge ideas and take

risks. This helps students engage more actively with the group, as well as with the course content.

One of the strengths of the High Mountain Institute's academic component is the small class size. Educators and policymakers have researched the educational effects of class-size differences on student outcomes. Research on class size has found that smaller class sizes improve student achievement (Finn & Achilles, 1999). There are several explanations that contribute to this effect. One explanation is that small class sizes allow students to receive more individualized attention from teachers (Betts & Shkolnik, 1999). In smaller classes, teachers have more time and resources to devote to each student. The increased attention also reduces disciplinary problems because student misbehavior is much easier to detect. This means that teachers are able to devote more time to the educational content, rather than classroom management. As a result, teachers are able to demonstrate lessons more deeply and students are able to engage with concepts more effectively, which helps contribute to higher student achievement (Filges, Sonne-Schmidt, & Jorgensen, 2015).

Another explanation for how small classes positively impacts student learning is that small classes allow teachers to have greater knowledge of each student (Houtveen, Booij, de Jong & van de Grift, 1999). In a small group, teachers have fewer students to monitor, which means they are able to more effectively monitor each students' understanding of the material being taught. Teachers are able to respond to students' levels of understanding and adapt their instruction to ensure that each students' needs are being met.

Finally, small class sizes positively affect teacher satisfaction and enthusiasm (Anderson, 2000). This leads to greater teacher effort and more in-depth engagement with content material. The small classes at HMI help students receive more personalized instruction from faculty,

engage more deeply with material, and develop a deeper passion for the learning process. This can help invigorate students' confidence and encourage them to be a more active student when they return home after the HMI Semester.

The second component of the High Mountain Institute Semester program is the wilderness piece. In addition to enhancing the academic experience at HMI, wilderness exploration serves to build leadership skills in students. Students are not required to have any wilderness experience prior to arriving at HMI. Over the course of the semester, students learn a range of skills, from reading a topographic map to cooking pizza on a camping stove. The wilderness piece is grounded in backpacking expeditions. These expeditions range from ten to fourteen days and are broken up over the four month program. The fall semester includes two expeditions exploring the Colorado Rockies, and one in the canyons of Utah. The spring semester includes two expeditions in the Utah canyons, and one expedition skiing in the snowy Colorado Rockies. During each expedition, students continue lessons from their academic classes and gain further knowledge of backpacking and outdoor skills.

A typical day on a HMI expedition is long and tiring, yet exciting. Students wake up early, just as the sun is rising, and unzip their tent to greet the day. One student lights the starts boiling a pot of water on the stove, while another takes out the ingredients for a breakfast of oatmeal. After breakfast, students disassemble their tent and begin to pack up their backpack. Students do a sweep of the camp ground to make sure they haven't left any trash or any belongings, as they will not be coming back to this site. Students set out hiking with their groups around 9:30 and continue for several hours, with several hydration and snack breaks included. The group arrives at their next campsite in the early afternoon, and splits up to set up the tents. The group comes back together for an environmental science class, where they observe and

record details of different tree species in their surroundings. After class, students cook macaroni and cheese for dinner and then sit together as a group to debrief the day and discuss the next day's route.

HMI's expeditions are designed to promote independence and confidence in students, in addition to strengthening team building and collaboration. By providing students with a diverse array of group dynamics throughout the expedition, students learn how to work cooperatively in different group sizes. Students are given opportunities to work independently, work in small groups, and work in larger groups. Each expedition group is comprised of approximately ten to twelve students, and two to three instructors. Each day, this group is divided into smaller hiking groups (six to seven people). Additionally, students are assigned camping groups of three to four people that they spend every night with for the expedition. In these small groups, students must work together to set up their tent, find water sources, and cook dinner together. Engaging in these different groups, students are challenged to adapt to different group dynamics and develop their voice as a leader.

HMI places a large emphasis on ethics and leadership, both in nature and on campus (HMI Curriculum Guide). Leadership, defined as the process of influencing a group toward the accomplishment of particular goals, is taken a step further in the outdoors (Martin, Cashel, Wagstaff, & Breunig, 2006). Outdoor leadership is the practice of guiding individuals in outdoor education and recreation experiences (Martin et al., 2006), which introduces an element of protecting the safety of group members and the natural environment. Engaging in leadership in outdoor contexts requires a high level of awareness and attentiveness. An essential element of leadership development is "recognizing and accepting one's abilities and limitations as a leader" (Martin et al., 2006, p. 6). This process of self reflection and discovery is important for

understanding one's strengths as a leader and areas where one needs more support. Effective leadership requires engaging in interaction and communication with group members, and creating opportunities for dialogue in the group.

Students at HMI learn about leadership in both theory and practice. One of the required courses all students take at HMI is "Practices and Principles: Ethics of the Natural World" (HMI Curriculum Guide). This course focuses on the theory of ethics, environmental ethics, and leadership. This course is designed to promote individual and community growth; in the classroom and in the wilderness, students are stretched to think about their role in their community and environment. Students engage in class discussions on topics relating to leadership, communication, risk management, decision making, and technical skills. Students learn about different decision making strategies and leadership styles and then have the opportunity to practice these skills on the expeditions. The class emphasizes that there are many different forms of leadership, and that effective leadership requires being able to adapt to different contexts. Developing experience analyzing situational variables helps one determine the most appropriate form of leadership in different situations. While some situations may require a leader to be assertive and highly directive of the group, other situations may produce better outcomes for the group by the leader engaging the group members in the decision making process.

The skills and theories that students learn about leadership transfers over to the expedition setting. During HMI's expeditions, students are challenged physically and mentally. The challenges that students face on expeditions pushes students outside their comfort zone, and help facilitate self discovery and growth. Students gain experience in formal leadership roles during the expeditions, as each day there is a different student "leader of the day" (HMI). As

Leader of the Day, one is responsible for determining the hiking route for the day, setting the pace of the group, monitoring time, and managing hiking breaks. Students learn how to monitor and respond to the needs of the group. Students learn that to be an effective leader requires strong communication with the group. The leadership curriculum is not only promoted through the opportunity to be a “leader of the day,” but also through the development of technical skills. Building students’ technical expedition skills enhances their ability to develop a connection to the natural world. Feeling comfortable with living in the wilderness opens up the opportunity for students to engage in self reflection and gain greater self awareness. This can facilitate growth in students that extends beyond the context of the wilderness and even beyond the context of HMI. The challenges students face at HMI enable students to return home as more thoughtful learners and community members.

The third component of the HMI program is the emphasis on community. The HMI program is designed to build a close-knit community of students, teachers, and apprentices. The community and residential elements of HMI include cabin life, meals, morning exercise, town excursions, and activity periods (HMI). Students live in single sex wooden cabins of seven to twelve students. These cabins run on solar power for light and wood fires for heat. Cabin life helps students learn how to manage and maintain a positive living environment. The meals at HMI are cooked by a cook crew of five to six students. Each crew is responsible for cooking one breakfast and one dinner each week. The cook crew experience not only helps students gain valuable knowledge of nutrition and cooking, but also encourages students to collaborate with their peers in different ways. Monday through Friday, students participating in morning exercise activities from 7:30-8:00 with the group. Whether students are led on a run or in a yoga session, the morning exercise helps students prepare for the day both physically and mentally. Two to

three times per week, students have the opportunity to participate in activities and excursions. These are led by the faculty and apprentices, and may be indoors or outdoors, on campus or in town. Activities include tutoring students at the local middle school, field games, rock climbing, and cheese making. This element of the program encourages students to be open to new experiences and learn a new skill. In addition to these activities, students also engage in activities on Saturday evenings that bring together the whole group. From bowling to square dancing, these activities help build the sense of community.

The design of the HMI program, with students and faculty interacting in academic, residential, and wilderness settings, effectively creates an environment that is very community-oriented. There are many opportunities to build meaningful relationships in the community. Every other week, the entire community of students, faculty, and apprentices gather for a community meeting. This meeting serves as a time to address issues in the community or the broader world. This helps uphold community expectations, as well as promote mutual respect and trust between students and faculty. Another opportunity to facilitate community building is the advising program; at the beginning of the semester, students are divided into advisory groups with four to six other students and one faculty advisor. The advisory program is designed to support students' academic and social wellbeing, and help smooth the transitions students face from home to HMI, and then HMI to home. The low ratio of advisor to students helps ensure that each student receives high levels of support and attention. The advisor program also serves as a way for students and faculty members to build meaningful relationships outside the academic context. The emphasis HMI places on mentorship helps students become more actively engaged with their community.

Section Three: Outdoor Education at the Elementary Level

The High Mountain Institute can serve as a model for ways to promote outdoor-based learning at the elementary level. Having examined in Section Two the various benefits that can emerge from children spending time outside, there is compelling evidence that creating learning opportunities for this age demographic can be beneficial. Here I look at how learning outside can enhance the learning process for children. Additionally I explore ways to promote outdoor learning experiences for elementary students, and how aspects of the High Mountain Institute model can be transferred.

One way to promote outdoor educational experiences in elementary school is to utilize the schoolyard in creative ways. Educator Herbert Broda writes about how to use the schoolyard as an effective outdoor classroom in his book *Schoolyard-Enhanced Learning* (2007). Broda is a professor of education at Ashland University, and specializes in outdoor and experiential education. Broda argues that regardless of whether a school is an urban, rural, or suburban setting, using the outdoors as an extension of the classroom can enrich the learning experience. Broda defines the term schoolyard-enhanced learning and explains that the emphasis is not on play, but on instruction (2007, p. 12). This helps distinguish schoolyard-enhanced learning from recess or recreational play on school grounds. He defines schoolyard-enhanced learning as “an instructional strategy that uses the school site or adjacent areas to teach concepts and process skills from a variety of content areas” (Broda, 2007, p. 12). Broda argues that experience of learning outdoors helps children develop two critical process skills: observation and analysis (2007, p. 22). Learning outdoors encourages children to be more aware of their surroundings and identify what is happening around them and why.

One of the reasons that outdoor instruction is an effective educational tool for children is because it provides students a change of pace and place (Broda, 2007). The act of relocating a

class discussion from a classroom table to a picnic table outside can have an energizing effect on the class. Broda explains that, “being in a different environment can coax thinking down different avenues” (2007, p. 16). Presenting children with a variety of instructional experiences can help sustain children’s engagement. Although on the one hand moving outdoors can generate energy and enthusiasm in the class, moving outdoors can also help slow the pace of learning and promote reflection. Being in a natural environment enhances the senses and allows one to be more observant of sights, sounds, smells, and textures around. Engaging multiple senses can deepen the learning that takes places (Broda, 2007, p. 14). The act of learning outside makes the learning process more about experience than memorization, Learning outside can help children produce concrete connections for abstract concepts, and thereby improve children’s understanding.

Schoolyard-enhanced learning can have positive impacts on student achievement. One of the main impacts on student outcomes is that outdoor learning can increase students’ motivation to learn. When students are more interested and motivated to learn, they will be more engaged and therefore gain higher mastery of that content area (Marzano, 2003). Research on student motivation suggests that learning in outdoor contexts can increase students’ motivation, which means students achieve higher outcomes in an environmental setting rather than a traditional classroom (Marzano, 2003). Researchers Gerald Lieberman and Linda Hoody found compelling data promoting outdoor instruction (1998). Looking at forty schools in thirteen states, they found that using a school’s surroundings for instruction was associated with the following educational benefits: better performance on standardized academic measures, reduced discipline problems, increased engagement, and greater pride in accomplishments. Using the outdoors for instruction can increase enthusiasm for learning, for both students and teachers (Broda, 2007, p. 21). The

teacher's energy and attitude largely influences the class environment, and students' attitudes. A teacher that is more motivated herself is more likely to foster motivation in the class and create positive connections with her students.

The High Mountain Institute Semester program models several elements that nurture personal growth in its students, and could be effective in elementary school settings as well. The nature of the semester program, a four month immersive experience, makes it difficult to directly clone for elementary school, as elementary school students are not prepared to spend four months away from their parents. However, it is possible to integrate some of these design elements into elementary programs. By doing so, we can hope to create educational experiences for elementary students that deepen their passion for learning and support healthy child development.

The first element that is important is variation in instruction. One of the main points in *Schoolyard-Enhanced Learning* is that it is effective to use outdoor instruction to complement classroom time and not replace classroom time (Broda, 2007, p. 12). The reason for this is that when the outdoor context becomes the only instructional context, the novelty and excitement of learning outdoors is diminished. This theory seems to fit with the HMI model. Just as Broda argues for variety in instructional approaches in elementary and middle schools (2007), HMI works to provide students with varied instructional experiences; at HMI, students engage in learning in traditional classroom settings, as well as in a range of natural settings, from canyons to igloos. At a traditional elementary school, relocating the classroom to an outdoor setting, whether it's a forest or the schoolyard, can have the effect of generating enthusiasm in the class. In order to maximize student engagement, it is critical to create different learning experiences for students that increase students' motivation.

The second element is to use outdoor instruction as a tool to effectively integrate subject areas. The outdoors can serve as a natural setting that encourages an interdisciplinary approach to learning. Engaging students in real world experiences and problems can stretch them to think creatively and critically about the environment around them. When students see a real world application for what they are learning about, they are more likely to be motivated to apply themselves academically (Brody, 2007, p. 20). The processes of inquiry and analysis that students use in outdoor instruction transcend the boundaries of subject areas. At HMI, this involves students interpreting patterns in the natural landscapes through multiple perspectives; while studying the impact of forest fires, students look at ecological changes in the soil in addition to investigating the cultural history of the area.

An example of this interdisciplinary approach is seen in a sixth grade class in Guilford, Vermont (Dubel & Sobel, 2008). In this class, students used the landscape of Guilford, it's natural and cultural history, to study geology. Students spent four months exploring sedimentary rocks, and ended up drawing on several different subject areas in their exploration. The class began with a scientific approach, studying slate through a basic geological lens. This study prompted them to investigate the cultural history of humans' connection to the slate in their town, introducing social studies to the project. From here, the class propelled into research on census data from the town, promoting mathematics and statistical skills. Finally, students worked together to communicate the findings from their project, which honed their language arts skills. This example demonstrates how engaging children in direct experiences outdoors can naturally integrate subjects and add depth to students' understanding of big concepts.

The third element is to integrate the environment into the academic content. This is what is referred to as place-based education. At HMI, this involves engaging students in fieldwork that

draws their attention to their environment, and looking at topics through an ecological lens. At a traditional elementary school, teachers can design projects using the surrounding environment as the foundation. This could entail using the trees outside to learn about measurement and mathematics, or simulating a town meeting based on a town's history to learn about civics and government (Dubel & Sobel, 2008). Providing students with direct experiences helps them make connections (Brody, 2007). This is important in encouraging children to think about their role in their community and in the environment.

The fourth element is to create opportunities for students that help build leadership skills. HMI has a very strong emphasis on leadership; students learn about leadership theories and styles in the classroom, and then are challenged to assume formal leadership roles during the wilderness expeditions. Though learning how to manage a group of peers is a valuable skill, the leadership skills that would be most valuable in elementary school are self-awareness and communication. Engaging children in outdoor experiences that may be physically or mentally challenging can help them think about their strengths and weaknesses. This can help children gain greater self-awareness, which can help support their intellectual and social development. Working with groups of different sizes in the outdoors can help children learn to adapt to different situations. Children learn how to effectively communicate their needs and desires and collaborate with a group.

Conclusion

Over the past several decades, children have shifted towards spending less time outdoors, and significantly more time immersed in electronics. The increasing distance between children and the natural world has been explored by educators and researchers in recent years. Research on children's outdoor exposure suggests that promoting opportunities for children to engage in

outdoor activities has positive implications on many levels. First, being outdoors supports healthy physical development. Second, being outdoors can help promote social development and help children build interpersonal skills. Third, being outdoors can support psychological and cognitive development, improving children's attention and concentration.

Engaging in outdoor experiences not only has benefits for children's health and wellbeing, but also for children's development as learners. Outdoor education is the term used to describe learning experiences that are based in outdoor settings. Outdoor education experiences provide a change of pace and place, which can increase students' enthusiasm and motivation to learn. Learning in outdoor settings engages more senses and deepens students' understanding of concepts. Educational programs that center on outdoor-based learning are largely available for high school students, in the form of semester-long education experiences. The High Mountain Institute serves as an example of an outdoor-based learning experience, with students splitting instruction time between the classroom and the mountains. Though this program is designed for eleventh grade students, adapting some of its elements to educational experiences for elementary students could enhance learning at this level. Elementary school is a critical time for children's development - physical, social, psychological, intellectual- and engaging in outdoor education experiences can help children build valuable learning skills.

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